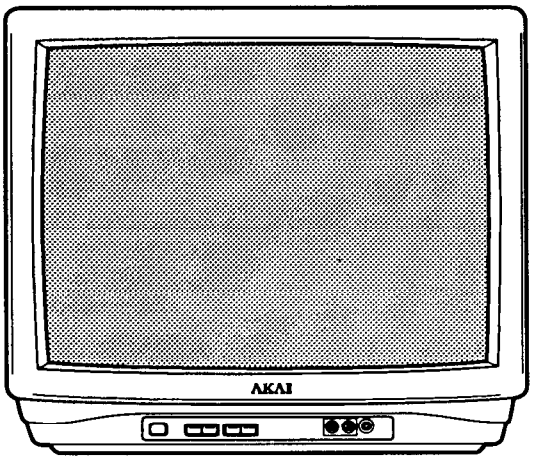
AKAI SERVICE MANUAL



MODEL CT-2157D

COLOUR TELEVISION

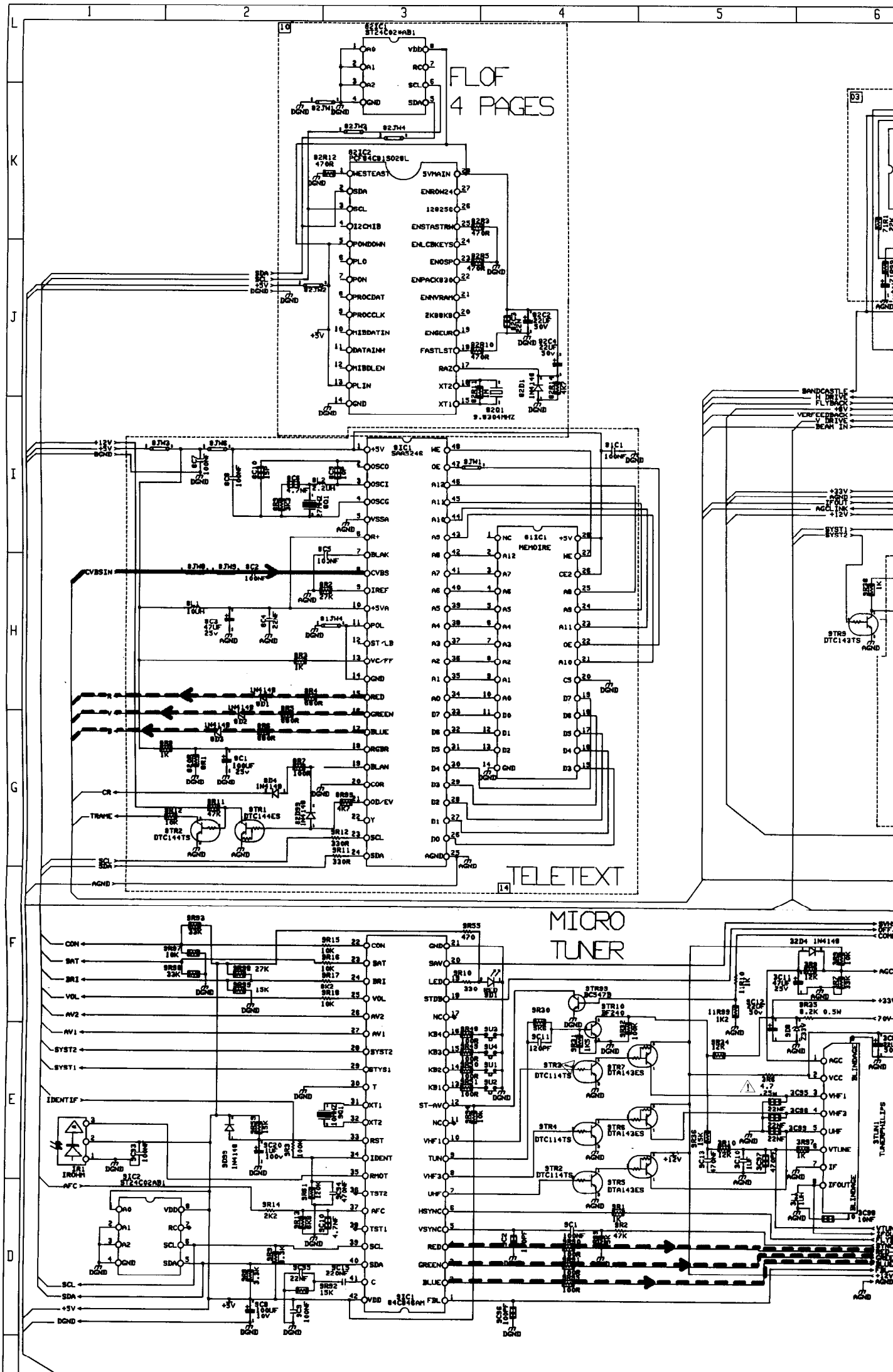
MODEL CT-2137F/UKT

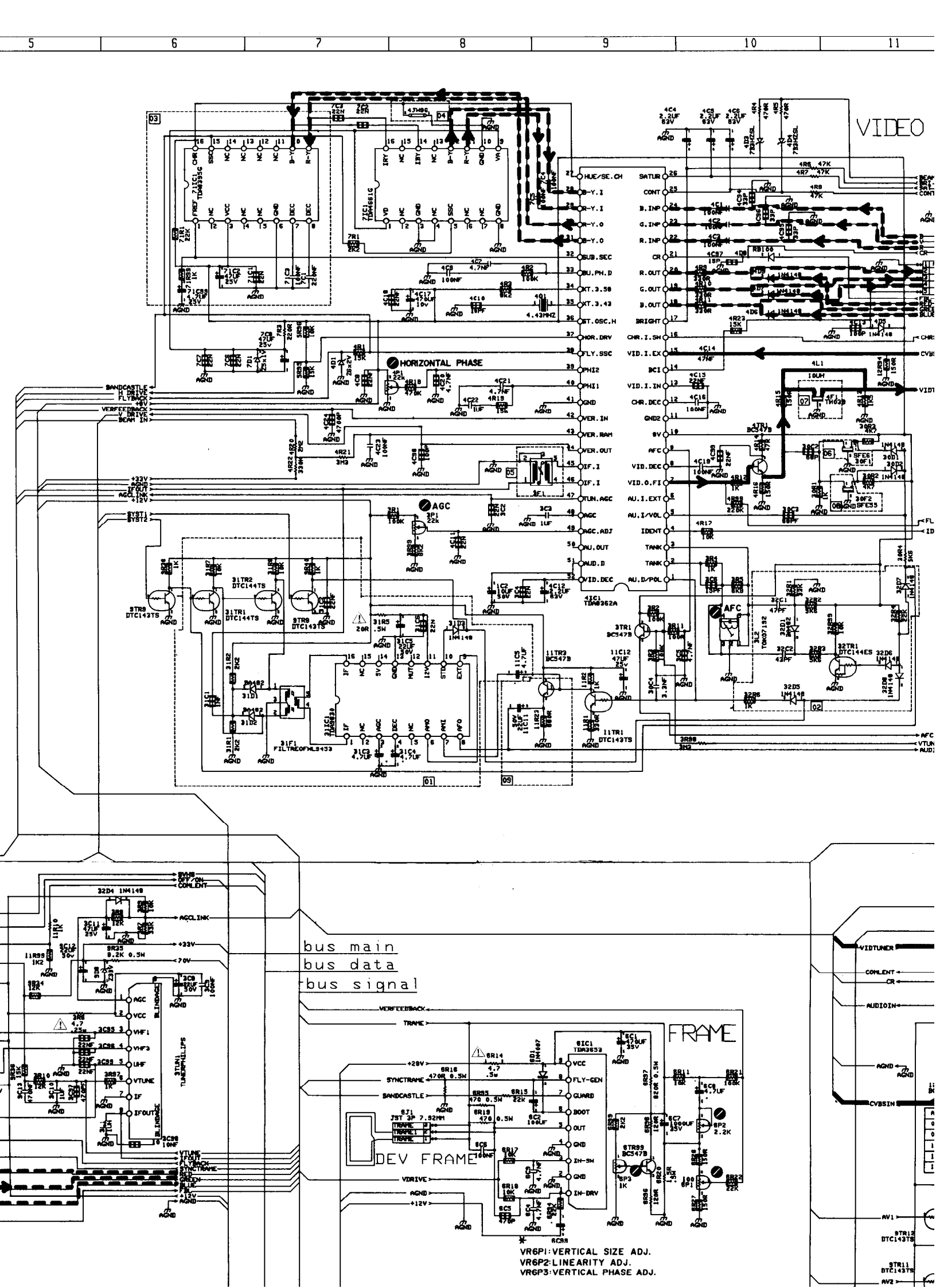
MODEL CT-2157D/DT/E/ET/F/P/PT/UKT

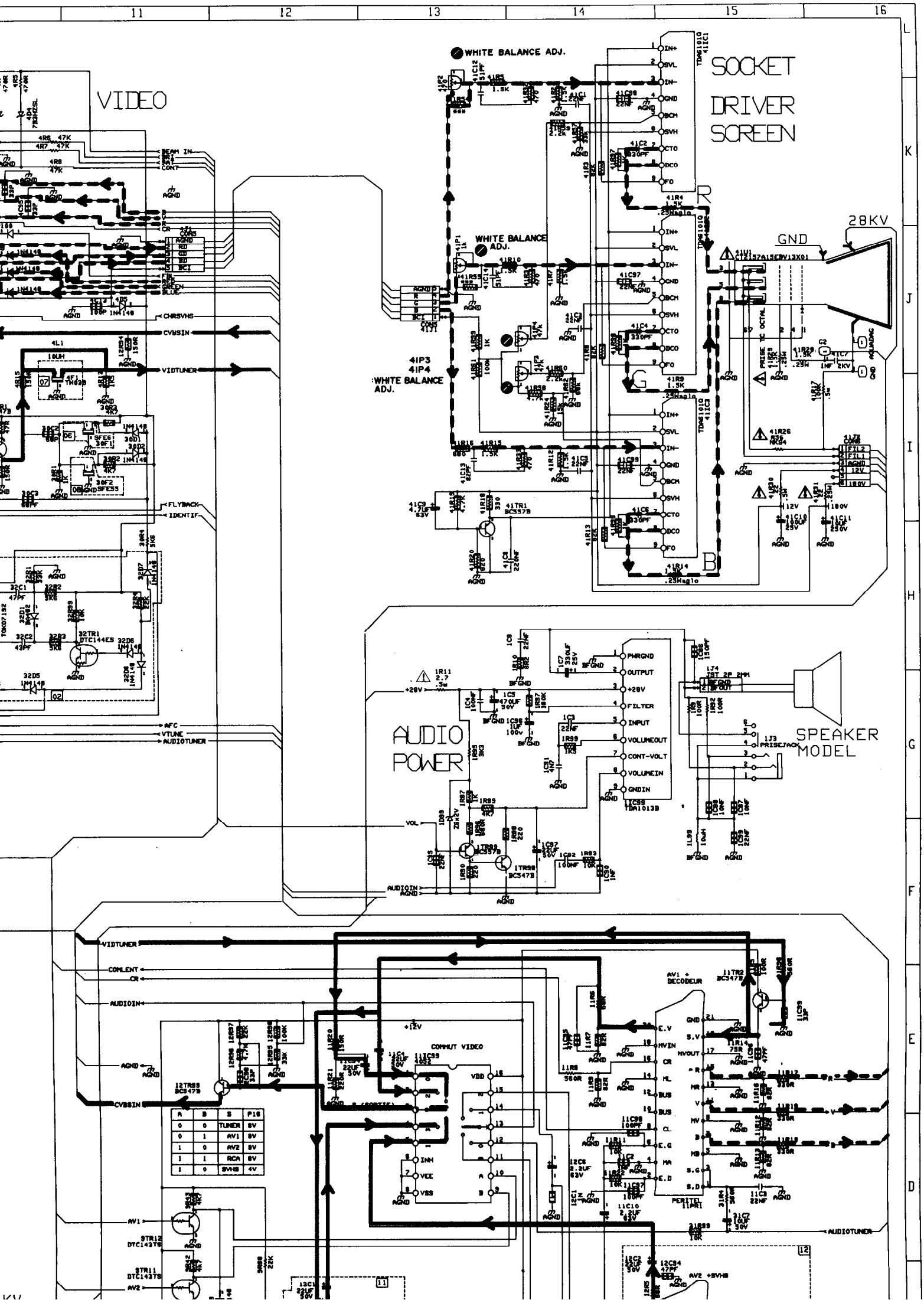
SPECIFICATIONS

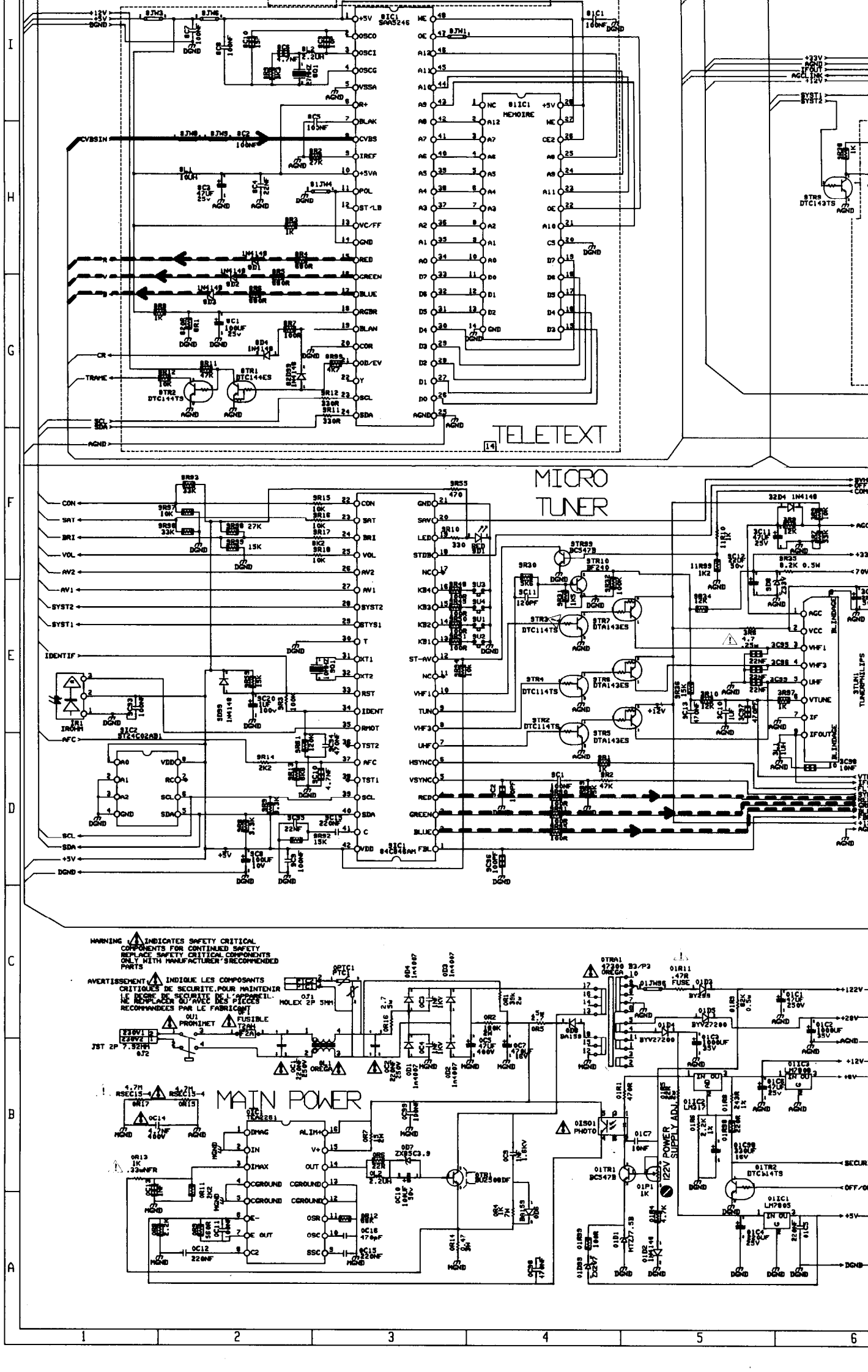
Broadcasting form	
2157D/DT	BG,DK PAL-SECAM
2157E/ET	BG PAL-SECAM
2137F, 2157F.	BG,I,LL PAL-SECAM
2157P/PT	PAL BG
2137UKT, 2157UKT	PAL I
Selection form	Infra-red remote control
Programme channel	60
Receive channel	
2157D/DT	
System BG	VHF : ch 2 - 12
	UHF : ch 21 - 69
	Cable : ch S01 - S03, S1 - S41
System DK	VHF : R1 - RX11, 4 - 9
	UHF : ch 21 - 69
2157E/ET,2157P/PT	
System BG	VHF : ch 2 - 12
	UHF : ch 21 - 69
	Cable : ch S01 - S03, S1 - S41
2137F, 2157F	
System LL	VHF : ch 2 - 4, 5 - 10
	UHF : ch 21 - 69
	Cable : ch B - Q
System BG	VHF : ch 2 - 12
	UHF : ch 21 - 69
	Cable : ch S01 - S03, S1 - S41
System I	UHF : ch 21 - 69
	VHF : 1A - 1J (Ireland)
	Cable : S01 - S03, S1 - S41
2137UKT, 2157UKT	
System I	UHF : ch 21 - 69
	VHF : 1A - 1J (Ireland)
	Cable : S01 - S03, S1 - S41
Music power	5 W RMS
Power requirement	
2137UKT, 2157UKT	230 V - 240 V AC, 50 Hz
Except 2137UKT, 2157UKT	230 V AC, 50 Hz
Power consumption	60 W
CRT size	21 inches (Picture : 51 cm)
Set dimensions	530 (W) x 450 (H) x 474 (D) mm
Packing dimensions	600 (W) x 575 (H) x 565 (D) mm
Weight	21 kg
Gross weight	24 kg

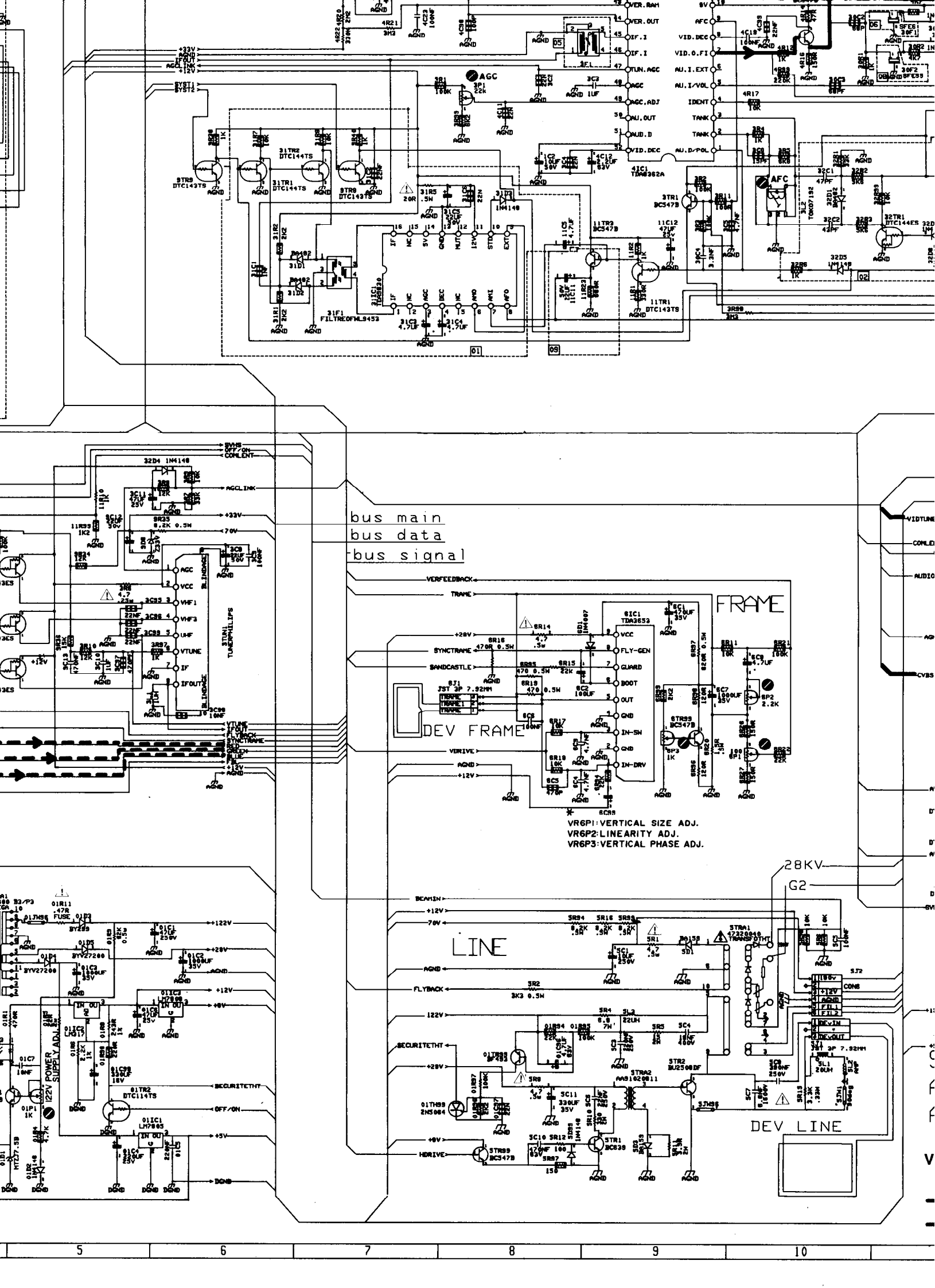
* For improvement purposes, specifications and design are subject to change without notice.

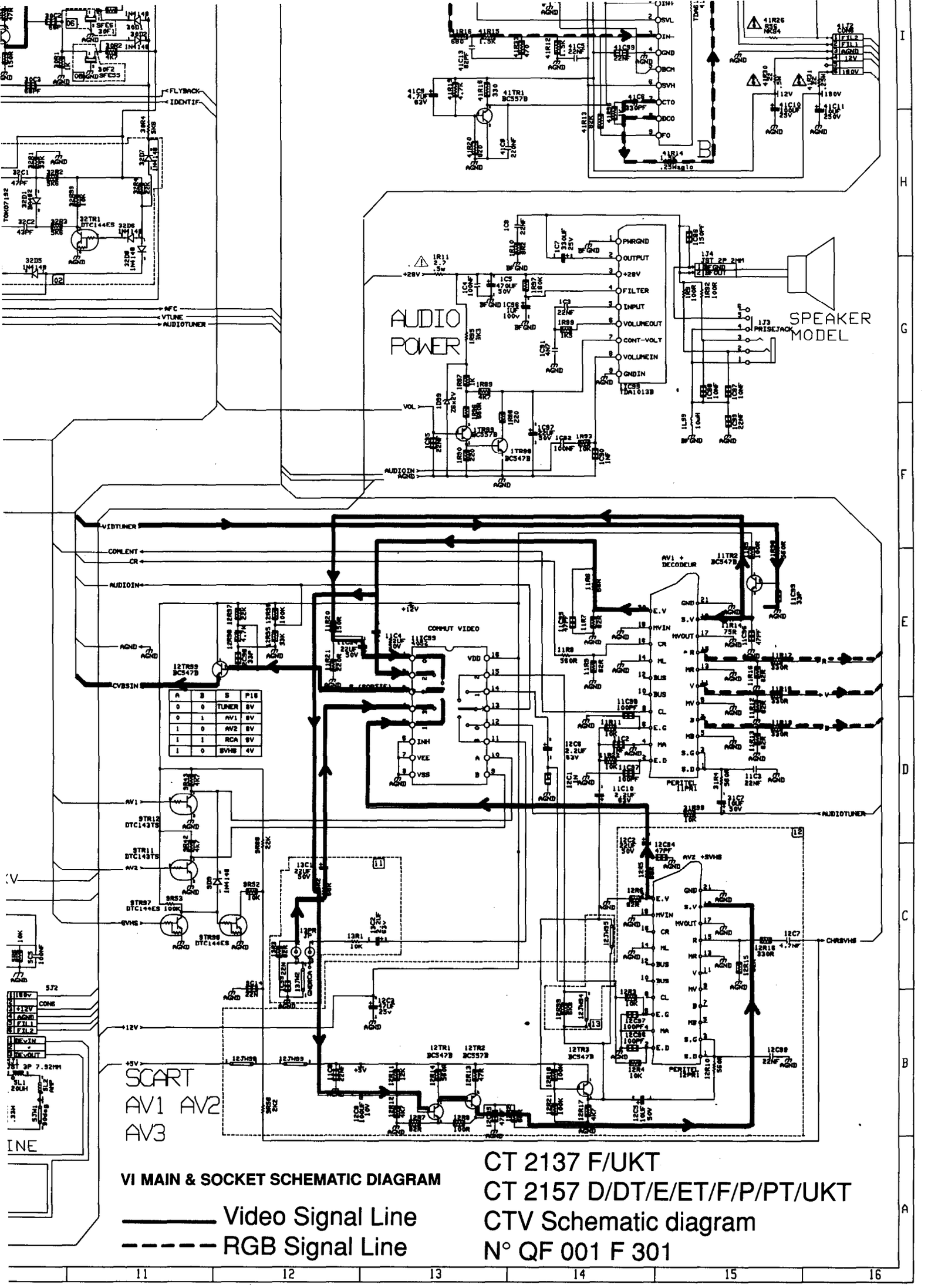

FLOF
4 PAGES
TELETEXT
MICRO
TUNER
MEMOIRE
CVBSIN
CR
TRAME
IDENTIF
AFC
SCL
SDA
+5V
DGND
+12V
AGND


VIDEO
HORIZONTAL PHASE
AGC
AFC
FRAME
DEV FRAME
bus main
bus data
bus signal
VR6P1:VERTICAL SIZE ADJ.
VR6P2:LINEARITY ADJ.
VR6P3:VERTICAL PHASE ADJ.


VIDEO
SOCKET
DRIVER
SCREEN
WHITE BALANCE ADJ.
WHITE BALANCE ADJ.
WHITE BALANCE ADJ.
4IP3
4IP4
28KV
GND
AUDIO
POWER
SPEAKER
MODEL
CHRSVHS
CVBSIN
VIDTUNER
FLYBACK
IDENTIF
AFC
VTUNE
AUDIOTUNER
COMLENT
CR
AUDIOIN
VOL
COMMUT VIDEO
AV1 +
DECODEUR
AV1
AV2
AV2 +SVHS
PERITEL
1IPR1
TDA6101Q
TDA1013B
BC547B
BC557B
DTC143TS
DTC144ES


TELETEXT
MICRO
TUNER
MAIN POWER
WARNING ⚠ INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS
AVERTISSEMENT ⚠ INDIQUE LES COMPOSANTS CRITIQUES DE SECURITE. POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL: NE REMPLACER QU'AVEC DES PIECES RECOMMANDEES PAR LE FABRICANT
I22V POWER SUPPLY ADJ.


bus main
bus data
bus signal
FRAME
DEV FRAME
LINE
DEV LINE
VR6P1:VERTICAL SIZE ADJ.
VR6P2:LINEARITY ADJ.
VR6P3:VERTICAL PHASE ADJ.
28KV
G2
AGC
AFC
POWER SUPPLY ADJ.
5
6
7
8
9
10


AUDIO POWER
SPEAKER MODEL
SCART
AV1 AV2
AV3
VI MAIN & SOCKET SCHEMATIC DIAGRAM
Video Signal Line
RGB Signal Line
CT 2137 F/UKT
CT 2157 D/DT/E/ET/F/P/PT/UKT
CTV Schematic diagram
N° QF 001 F 301

I MEASURED VOLTAGES OF THE SEMICONDUCTORS

ICS

0IC1

1	—
2	—
3	0.1 V
4	—
5	—
6	2.4 V
7	2.6 V
8	0 V
9	3.0 V
10	2.4 V
11	2.5 V
12	—
13	—
14	1.1 V
15	11.6 V
16	12.9 V

01IC1

1	15.4 V
2	—
3	5.0 V

01IC2

1	11.4 V
2	17.4 V
3	12.6 V

01IC3

1	12.6 V
2	—
3	8.0 V

1IC99

1	—
2	14.3 V
3	28.4 V
3	14.2 V
5	0 V
6	0 V
7	14.3 V
8	0 V
9	—

0IS01

1	16.5 V
2	15.5 V
3	0 V
4	2.4 V
5	12.9 V
6	0 V

4IC1

1	3.2 V
2	5.9 V
3	5.9 V
4	7.1 V
5	1.6 V
6	3.8 V
7	3.2 V
8	1.7 V
9	4.7 V
10	8.0 V
11	—
12	3.3 V
13	4.4 V
14	3.9 V
15	3.8 V
16	0.7 V
17	1.2 V
18	2.8 V
19	2.6 V
20	2.7 V
21	3.3 V
22	3.3 V
23	3.3 V
24	3.3 V
25	2.1 V
26	1.5 V
27	5.8 V
28	3.8 V
29	3.8 V
30	1.5 V
31	1.5 V
32	1.6 V
33	4.8 V
34	2.2 V
35	2.0 V
36	8.0 V
37	4.4 V
38	0.5 V
39	3.1 V
40	3.8 V
41	—
42	2.5 V
43	2.6 V
44	3.9 V
45	4.0 V
46	4.0 V
47	7.8 V
48	3.8 V
49	1.9 V
50	3.5 V
51	4.7 V
52	6.5 V

6IC1

1	1.2 V
2	0 V
3	1.9 V
4	0 V
5	14.8 V
6	27.4 V
7	0.5 V
8	4.7 V
9	27.2 V

7IC1

1	5.0 V
2	0 V
3	—
4	—
5	0.5 V
6	0 V
7	0 V
8	—
9	4.9 V
10	—
11	3.1 V
12	3.1 V
13	0 V
14	1.3 V
15	0 V
16	1.3 V

71IC

1	1.6 V
2	1.2 V
3	8.0 V
4	0 V
5	0 V
6	—
7	3.2 V
8	4.2 V
9	1.5 V
10	1.5 V
11	0 V
12	0 V
13	0 V
14	0 V
15	0.5 V
16	5.7 V

8IC1

1	5.1 V
2	2.3 V
3	3.6 V
4	0 V
5	—
6	5.0 V
7	2.2 V
8	2.3 V
9	2.5 V
10	5.0 V
11	—
12	2.3 V
13	5.1 V
14	—
15	0 V
16	0 V
17	0 V
18	2.2 V
19	0 V
20	—
21	0 V
22	0 V
23	3.1 V
24	2.7 V
25	—
26	0 V
27	0 V
28	0 V
29	0 V
30	0 V
31	4.7 V
32	0 V
33	0 V
34	3.7 V
35	3.6 V
36	3.6 V
37	1.2 V
38	1.3 V
39	4.0 V
40	3.5 V
41	1.0 V
42	4.3 V
43	4.3 V
44	0.8 V
45	0.8 V
46	0.8 V
47	2.5 V
48	5.0 V

81IC1

1	0 V
2	4.3 V
3	1.0 V
4	3.5 V
5	4.0 V
6	1.3 V
7	1.2 V
8	3.6 V
9	3.6 V
10	3.7 V
11	0 V
12	0 V
13	4.7 V
14	—
15	0 V
16	0 V
17	0 V
18	0 V
19	0 V
20	—
21	4.4 V
22	2.5 V
23	0.8 V
24	0.8 V
25	0.8 V
26	5.1 V
27	5.0 V
28	5.1 V

11IC99

1	1.0 V
2	0.3 V
3	1.0 V
4	0.3 V
5	2.1 V
6	—
7	—
8	—
9	0 V
10	0 V
11	1.9 V
12	1.6 V
13	1.6 V
14	2.2 V
15	0.5 V
16	12.6 V

9IC1

1	0 V
2	0 V
3	0 V
4	0 V
5	–0.1 V
6	0.4 V
7	5.1 V
8	0 V
9	4.1 V
10	0 V
11	1.5 V
12	5.1 V
13	5.1 V
14	5.1 V
15	5.1 V
16	5.0 V
17	5.0 V
18	0 V
19	0 V
20	0 V
21	0 V
22	4.9 V
23	2.0 V
24	0.9 V
25	1.2 V
26	4.2 V
27	4.2 V
28	3.4 V
29	5.0 V
30	—
31	2.3 V
32	1.9 V
33	4.9 V
34	3.7 V
35	5.0 V
36	5.0 V
37	2.4 V
38	5.1 V
39	3.4 V
40	3.2 V
41	5.0 V
42	5.1 V

9IC2

1	0 V
2	—
3	—
4	—
5	3.2 V
6	3.4 V
7	1.7 V
8	5.1 V

※ Voltages indicated above were measured when an RF signal was being received, (However, the DC voltmeter's negative input was connected to the M. GND when the primary section was measured.)

TRANSISTORS

	BASE	COLLECTOR	EMITTER
0TR1	0 V	294.0 V	0 V
01TR1	6.7 V	15.5 V	6.1 V
01TR2	0 V	11.4 V	—
01TR99	0 V	122.0 V	123.0 V
1TR99	1.8 V	0.5 V	2.4 V
1TR98	0.5 V	4.9 V	—
3TR1	4.5 V	8.0 V	4.0 V
4TR1	2.9 V	7.2 V	2.2 V
5TR1	0.1 V	27.4 V	—
5TR2	0 V	121.0 V	—
5TR99	2.3 V	8.0 V	2.2 V
6TR99	3.7 V	11.4 V	3.1 V
8TR1	0 V	2.7 V	—
8TR2	2.7 V	0 V	—
9TR2	5.1 V	0 V	0 V
9TR3	0 V	12.6 V	—
9TR4	0 V	12.6 V	—
9TR5	0 V	12.6 V	12.6 V
9TR6	12.6 V	0 V	12.6 V
9TR7	12.6 V	0 V	12.6 V
9TR9	5.0 V	0 V	—
9TR10	0.5 V	2.0 V	0 V
9TR11	5.0 V	0 V	—
9TR12	5.0 V	0 V	—
9TR99	0 V	5.1 V	—
11TR1	3.2 V	6.1 V	2.2 V
11TR2	2.1 V	12.6 V	1.5 V
11TR3	6.1 V	12.6 V	5.5 V
12TR3	0.7 V	4.7 V	0 V
12TR99	1.0 V	12.6 V	0.6 V
41TR1	2.0 V	—	2.5 V

5-4. SCREEN (G2) adjustment

1) Use the pattern generator (PM5518) to input a black signal into AV-1 (EURO socket).
2) Set the TV's contrast to minimum and the brightness to the centre position with the remote control.
3) Using an oscilloscope, measure the cathode voltages at the resistors 41R4 (R), 41R9 (G), 41R14 (B) on the SOCKET PCB and confirm which point is the highest.
4) After measurement, adjust "SCREEN" on the FBT so that the highest of the above three points becomes 150 V as shown.

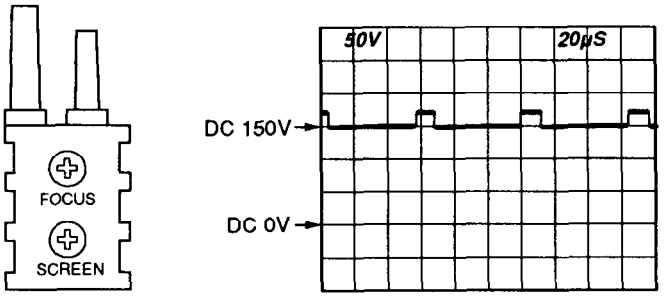


Fig. 5-6

5-5. Focus adjustment

1) Use the pattern generator (PM5518) to input a cross hatch signal into AV-1 (EURO socket).
2) Set the contrast to the 1/3 position of the control range and the brightness to the centre position with the remote control unit.
3) Adjust the "FOCUS" on the FBT so that the focus adjustment zone's sharpness is optimum as shown.

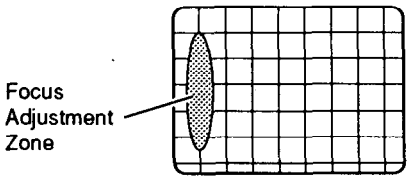


Fig. 5-7

5-6. TUNER adjustment

5-6-1. AFC adjustment

1) Set the RF output frequency of the pattern generator (PM5518) to exact 38.9 MHz (carrier only) [except UKT] or exact 38.5 MHz (carrier only) [UKT only] (IF carrier frequency) with 80 dBμV sensitivity.
2) Connect the RF output of the pattern generator to the 8 pin of the TUNER unit.
3) Connect the DC voltmeter to the resistor 9R14.
   Select the menu STD-2 and a UHF band at the beginning of the bargraph with the remote control unit.
4) Adjust the 3L2 coil so that the meter indicates 3.4 ± 0.4 V.

5-6-2. AGC adjustment

1) Use the pattern generator (PM5518) to input the 60 dBμV (1mV) sensitivity RF UHF signal into the ANT.IN terminal.
2) Connect the DC voltmeter to the anode of the 32D4.
3) Adjust VR3P1 so that the reading on the meter is 8 ± 0.5 V.

5-7. White balance adjustment

1) Set the contrast to the 1/4 position (130cd ± 10 in white signal) and brightness to the 3/4 position (2cd ± 0.2 in black signal) with the remote control unit.
2) Use the pattern generator (PM5518) to input a white signal into AV-1 (EURO socket).
3) Attach the sensor of the colour analyzer on the TV screen.
4) Adjust VR41P1 and VR41P2 on the SOCKET PCB so that the X and Y values are indicated within the following values of the coordinates of the colour temperature.
5) Use the pattern generator (PM5518) to input a black signal into AV-1 (EURO socket).
6) Adjust VR41P3 and VR41P4 on the SOCKET PCB so that the X and Y values are indicated within the following values of the coordinates of the colour temperature.

   X=0.295 ± 0.010, Y=0.303 ± 0.010 (8000 ± 1200 °K)
   According to CIE-xy chromaticity diagram

   If results are not satisfactory, repeat adjustment from steps 5-7-4) to 5-7-6) untill correct white balance is obtained.

NOTE : If there is no colour analyzer available, adjust VR41P1, VR41P2, VR41P3 and VR41P4 so that the correct white picture is obtained.

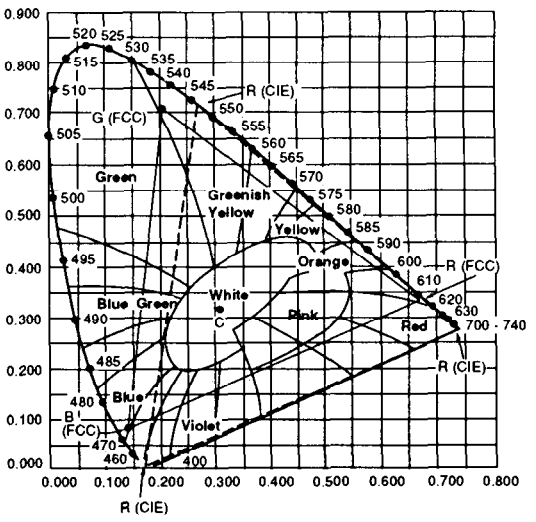


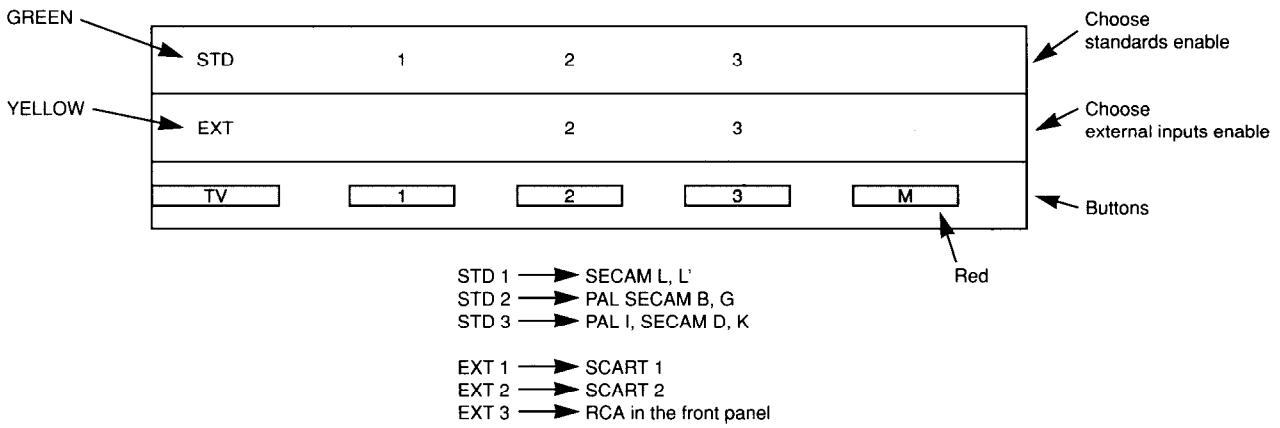
Fig. 5-8

VI. FACTORY MODE

In the Akai factory, we choose for each model, standards and external inputs enable according to each destination. When the Main P.C. Board or EEPROM in the Main P.C. Board is replaced for any reason, memorize the content according to the following procedure.

1) Press the buttons DISPLAY, ~~MENU~~ and ~~SLEEP~~ on the remote control continuously.
   Then, a menu display appears on the screen as shown below.

DISPLAY SLEEP MENU



2) Press the green button once. Then, at the same time the STD character by green colour is changed to white character.
3) Choose required STD number with 1 ~ 3 button.
4) Press the yellow button once. Then, at the same time the EXT character by yellow colour is changed to white character.
5) Choose required EXT number with 1 ~ 3 button.
6) Press the red button to memorize.
7) Press the TV button to return to normal picture.

SPECIFICATION

Description / Product			CT 2137F	CT 2137UKT	CT 2157P				CT 2157E	CT 2157F	CT 2157D	CT 2157PT				CT 2157ET	CT 2157DT	CT 2157UKT
Model																		
Country			FRANCE	UK	SPAIN	SCANDVINA	ITALIA	GERMANY	GREECE	FRANCE	EE AU SR TO PE	SPAIN	SCANDVINA	ITALIA	GEAMANY	B/EG NR EE LE UC XE	EE AU SR TO PE	UK
Classification			E5	B1/B2	E1	E2	V2	V1	E1	E5	Y1	E1	E2	V2	V1	E1	Y1	B1/B2
Reception Standard	1	Secam B/G	o						o	o	o					o	o	
	2	Secam L/L'	o							o								
	3	PAL B/G	o		o	o	o	o	o	o	o	o	o	o	o	o	o	
	4	PAL I	o	o						o								o
		Secam D/K									o						o	
Input Video Standard	PAL		o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
	Secam		o						o	o	o					o	o	
Input Video	E1:Scart 1		o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
	E2:Scart 2									o						o		o
	E3:RCA				o	o	o	o	o	o	o	o	o	o	o	o	o	o
Head Phone Jack			o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
Teletext	Flof+Standard (Euro)			o								o					o	o
	Standard (Euro)												o	o	o	o		